REMARKS

Claims 1 - 2 and 4 - 27 remain in this application.

Claim Rejections Under 35 U.S.C. §101

In the first Office Action mailed December 28, 2006, in paragraph 3, the Office Action rejected claims 1 through 27 under 35 U.S.C. §101 stating that, "the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility." The Office Action states that "The claims claim that a topology map is generated, forwarded and updated. It is not clear what is 'useful' with regard to this." Applicants responded to this rejection showing that the embodiments of the invention of wavelength discovery are clearly useful and meet the requirements of 35 U.S.C. §101.

Now, in the present Office Action in paragraph 1, the claims 1-27 are rejected again under 35 U.S.C. §101 but for a different reason. The Office Action now states that the claims are rejected under 35 U.S.C. §101 because, "the claimed invention is directed to non-statutory subject matter." Applicants traverse and disagree that the claims are directed to non-statutory subject matter under 35 U.S.C. §101.

According to M.P.E.P §2106:

> The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to -- process, machine, manufacture, or composition of matter -- [provided the subject matter falls into at least one category of statutory subject matter] but rather on the essential characteristics of the subject matter, in particular, its practical utility. For example, a claimed invention may be a combination of devices that appear to be directed to a machine and one or more steps of the functions performed by the machine. Such instances of mixed attributes, although potentially confusing as to which category of patentable subject matter the claim belongs, does not affect the analysis to be performed by USPTO personnel.

And again according to M.P.E.P. §2106:

> USPTO personnel first shall review the claim and determine if it provides a transformation or reduction of an article to a different state or thing. If USPTO personnel find such a transformation or reduction, USPTO personnel shall end the inquiry and find that the claim meets the statutory requirement of 35 U.S.C. 101. *Nelson v. Bowler*, 626 F.2d 853, 856, 206 USPQ 881, 883 (CCPA 1980).

The claims 1-27 clearly describe statuory subject matter that provides a transformation or reduction of an article to a different state or thing. As stated in claim 1, network elements generate a first wavelength topology map of wavelengths inserted in a first direction at each network element having an optical architecture; generate a second wavelength topology map of wavelengths inserted in a second direction at each network element; forward said first wavelength topology maps in said first direction to adjacent network elements over a dedicated overhead wavelength channel; forward said second wavelength topology maps in said second direction to adjacent network elements over said dedicated overhead wavelength channel; responsive to messaging via said dedicated overhead wavelength channel, updating each of said first and second topology maps at each of said network elements; and wherein the step of updating each of said first and second topology maps further comprises determining passthrough wavelengths at each network element. Thus, clearly the network elements in claim 1 are articles tranformed to a different state. Similarly, claims 10 and 18 also describe embodiments of the invention wherein a network element is tranformed to a different state.

As stated in M.P.E.P. 2106.01:

> Computer programs are often recited as part of a claim. USPTO personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Only when the claimed invention taken as a whole is directed to a mere program

listing, i.e., to only its description or expression, is it descriptive material *per se* and hence nonstatutory.

Since the claims as a whole are not directed merely to a program listing, but to network elements that are transformed to a different state and/or processes that are used to transform network elements to a different state, the claims are directed to statutory subject matter under 35 U.S.C. §101.

Claim Rejections Under 35 U.S.C. §112, First Paragraph

The Office Action rejected claims 1 through 27 under 35 U.S.C. §112, first paragraph for failing to comply with the enablement requirement. The Office Action states that the specification "does not teach specific means that generate a first and second topology map or even specific means to forward and update the maps." The Office Action also states that, "It is unclear how the "craft" retrieves this information and WHAT an NOC 228 is." Applicants respectfully traverse this rejection. According to M.P.E.P. 2164.04, "A specification disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as being in compliance with the enablement requirement of 35 U.S.C. 112, first paragraph."

First, the specification clearly describes at least one embodiment to forward and update the maps. As stated in paragraph 18, a dedicated overhead wavelength channel, DCC 128 shown in Figure 1A and Dcc 224 shown in Figure 2, provide an out of band communications channel for OAM&P functions. In one exemplary embodiment, the DCC wavelength is operable to provide for forwarding of the wavelength topology map information generated at each network elmeent to adjacent network elements in either of the directions.

Second, the specification clearly describes specific at least one embodiment for a means to generate a first and second topology map and for updating maps in response to receiving a forwarded map portion. For example, paragraphs 19 and 20 explain how adjacent NE checks to see if it is inserting a wavelength from on of its transponders and sends wavelength information

in the form of a map corresponding to the inserted wavelength to an adjacent NE. The adjacent NE checks to see if it is inserting the same wavelength back to the originating NE from one of its transponders. If so, the adjecent NE sends wavelength information back to the originating NE about the desination of the wavelength. However, if the adjacent NE does not insert the wavelength, then the adjacent NE now knows that the wavelength is passed through it and updates its wavelength topology map to reflect that the wavelength is a passthrough wavelength. A more detailed step by step approach to constructing an East and West wavelength topology maps by each network element is shown in Figure 1B and explained in detail in paragraph 20 through 23, *inter alia*. Paragraphs 24 and 25 explain in detail and provide specific examples of embodiments of how to determine a pass through wavelength.

Third, the specification clearly describes specific at least one embodiment on how a "craft" retrieves this information and what an NOC 228 is. M.P.E.P. 2164.05(a), states, "The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984). An NOC is described in claim 26 as a "Network Operations Center (NOC)". A person of skill in the art would readily understand what an NOC is from the specification. Paragraph 26 states that, "The updated wavelength topology maps 152-160 may be employed by a NOC or craft, for example, to provide visibility into the entire system from a single network element." Figure 2 illustrates an NOC 228 in a box format as it is a well known entity in the art. Furthermore, a person of skill in the art would readily understand how a "craft" or craftsperson retrieves information from a network element using a terminal in view of the specification and knowledge in the art. As described in the specification in paragraph 4, "Many of the maintenance operations associated with the optical network involve field operation technicians, i.e., "craftpersons" or "crafts," interfacing with network elements via terminals." Also paragraph 27 states, "As illustrated [in Figure2], craft 226 is performing maintenance operations on NE4 208 while communicating with

a NOC 228. As previously discussed, the craft 226 may access the NE4 208 via a terminal that provides necessary local operation and maintenance functionality. In particular, the terminal allows the craft 226 to activate/deactivate the network element and verify performance management by way of a set of functions that collect, process and display network traffic." Thus, a person of skill in the art would understand from the specification how a "craft" retrieves information and what an NOC 228 is.

For the above reasons, claims 1 through 27 comply with the enablement requirement under 35 U.S.C. §112, first paragraph.

Objection to the Drawings

The Office Action objected to the drawings under 37 C.F.R. 1.83(a). However, this rejection is traversed as the drawings clearly show every step of the claims as required. For example, Figure 3 shows each step in the method claim 1 cited by the Office Action as not shown in a drawing. Further, Figures 1B and 1C show an example of one embodiment of a means to generating the first topology maps and second topology maps and means for forwarding the maps and updating the maps.

Claim Rejections under 35 U.S.C. 103(a)

The Office Action rejected claims 1 through 27 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5781537 to Ramaswami et al (the Ramaswami reference) in view of US Application No. 2002/01781886 to Wu et al (the Wu reference). This rejection is traversed because neither the Ramaswami reference or the Wu reference, either alone or in combination, disclose or suggest the requirements of the claims.

Independent Claim 1 and dependent claims 2 through 9

Independent claims 1 states generating a first wavelength topology map of wavelengths inserted in a first direction at each network element; generating a second wavelength topology map of wavelengths inserted in a second direction at each network element; forwarding said first wavelength topology maps in said first direction to adjacent network elements over a dedicated overhead wavelength channel; forwarding said second wavelength topology maps in said second direction to adjacent network elements over said dedicated overhead wavelength channel; responsive to messaging via said dedicated overhead wavelength channel, updating each of said first and second topology maps at each of said network elements; and wherein the step of updating each of said first and second topology maps further comprises determining passthrough wavelengths at each network element.

The Ramaswami reference fails to disclose updating each of said first and second topology maps at each of said network elements having an optical architecture. As shown in Figure 6A and 6B and described at lines 25 through 25 through 28, the Ramaswami reference shows an optical routing node 201, an associated ATM switch 202 and a controller 203. As described at column 5 lines 11 through 15 of the Ramaswami reference, a "lightpath switch table" is updated and kept by the controller 203. The optical routing node 201 in the Ramaswami reference is not shown as updating or generating any type of topology map. Thus, the Ramaswami reference fails to disclose does a network element having an optical architecture that updates a first and second topology maps.

Furthermore the Ramaswami reference fails to disclose "wherein the step of updating each of said first and second topology maps further comprises determining passthrough wavelengths at each network element." As explained above, only the controller 203 knows the topology of the network and usage of wavelengths on the network links as described at column 7, lines 29 through 31 and column 8, lines 15 through 50 wherein the controller must set up the lightpaths from information on available wavelengths in the topology database. As such, topology information is not stored in the network element having an optical architecture but rather in the controller 203 attached to the ATM switch 202.

Finally, the Wu reference fails to add to the teachings of the Ramaswami reference. Nowhere does the Wu reference disclose that a network element with an optical architecture updates topology maps or determines passthrough wavelengths at each network element. Plus, neither reference discloses or suggests the problem solved by the present invention, described in paragraph 4, of a craftpersons interfacing with an optical network element not having an indication of passthrough traffic in the network element to check prior to maintenance operations. As stated in paragraph 31, by updating the first and second topology maps, the source and destiantion informtion may be discovered for all wavelengths in the network and the updated wavelength topology maps may be utilized to provide a craft person an indication of the passthough wavelengths in the network elements. Thus, the combination of the Ramaswami reference and the Wu reference fail to disclose or suggest the requirements of claim 1.

Independent Claim 10 and dependent claims 11 through 17

Claim 10 states means for generating a first wavelength topology map of wavelengths inserted in a first direction at each network element; means for generating a second wavelength topology map of wavelengths inserted in a second direction at each network element; means for only forwarding said first wavelength topology maps in said first direction to adjacent network elements over a dedicated overhead wavelength channel; means for only forwarding said second wavelength topology maps in said second direction to adjacent network elements over said dedicated overhead wavelength channel; and means responsive to messaging via said dedicated overhead wavelength channel for updating each of said first and second topology maps at each of said network elements. As explained in paragraph 19 of the present specification, in one embodiment of the invention, wavelength topology maps generated by a network element are only forwarded by a network element over a dedicated overhead wavelength channel to adjacent network elements and are not flooded or broadcast to the entire network any further. Furthermore, the topology maps forwarded in a first direction to adjacent network elements only include wavelengths inserted in that first direction.

The Ramaswami reference teaches away from this embodiment of the invention. The Ramaswami reference teaches a topological update procedure that broadcasts topology

information of a node to all other nodes by flooding or on a spanning tree. Timestamps are used to determine ordering of the update messages, as explained at column 7, lines 36 through 42.

Furthermore, the Ramaswami reference fails to disclose updating each of said first and second topology maps at each of said network elements having an optical architecture. As shown in Figure 6A and 6B and described at lines 25 through 25 through 28, the Ramaswami reference describes an optical routing node 201, an associated ATM switch 202 and a controller 203. The lightpath switch table is updated and kept by the controller 203 that is connected to the ATM switch 202, as described at column 5 lines 11 through 15. The optical routing node 201 in the Ramaswami reference is not shown as updating or generating any type of topology map. Thus, the Ramaswami reference does not disclose that the network element having an optical architecture updates topology maps.

Finally, the Wu reference fails to add to the teachings of the Ramaswami reference. Nowhere does the Wu reference disclose that a network element with an optical architecture updates topology maps or determines passthrough wavelengths at each network element. Plus, neither reference discloses or suggests the problem solved by the present invention, described in paragraph 4, of a craftpersons interfacing with an optical network element not having an indication of passthrough traffic in the network element to check prior to maintenance operations. As stated in paragraph 31, by updating the first and second topology maps, the source and destiantion informtion may be discovered for all wavelengths in the network and the updated wavelength topology maps may be utilized to provide a craft person an indication of the passthough wavelengths in the network elements. Thus, the combination of the Ramaswami reference and the Wu reference fail to teach or suggest the requirements of claim 10.

Independent claim 18 and dependent claims 19 through 27

Independent claim 18 states, a first network element associated with said optical network, said first network element being operable to generate a wavelength topology map having a first map portion and a second map portion, wherein said first map portion associated with said first network element is specific to a first direction of said optical network and said second map portion associated with said first network element is specific to a second direction of said optical

network; a second network element associated with said optical network, said second network element being operable to generate a wavelength topology map having a first map portion and a second map portion, wherein said first map portion associated with said second network element is specific to said first direction of said optical network and said second map portion associated with said network element is specific to said second direction of said optical network; and a dedicated overhead wavelength channel connecting said first network element to said second network element, said first network element being operable to transmit said first map portion to said second network element over said dedicated overhead wavelength channel, wherein said second network element utilizes said first map portion associated with said first network element to update said first map portion associated with said second network element.

As explained in paragraph 19 of the present specification, in one embodiment of the invention, the network elements generate two wavelength topology map portions, a first portion specific to a first direction and sent to adjacent network elements in that direction and a second portion specific to a second direction and only sent to adjacent network element in that second direction. The Ramaswami reference teaches away from this embodiment of the invention. The Ramaswami reference teaches a topological update procedure that broadcasts topology information of a node to all other nodes by flooding or on a spanning tree. Timestamps are used to determine ordering of the update messages, as explained at column 7, lines 36 through 42. There is no description in the Ramaswami reference of specific portions of the topological information that are only transmitted in specific directions.

The Wu reference fails to add to the teachings of the Ramaswami reference. Nowhere does the Wu reference disclose that a network element with an optical architecture updates topology maps or determines passthrough wavelengths at each network element. Plus, neither reference discloses or suggests the problem solved by the present invention, described in paragraph 4, of a craftpersons interfacing with an optical network element not having an indication of passthrough traffic in the network element to check prior to maintenance operations. As stated in paragraph 31, by updating the first and second topology maps, the source and destiantion informtion may be discovered for all wavelengths in the network and the updated wavelength topology maps may be utilized to provide a craft person an indication of the

passthough wavelengths in the network elements. Thus, the combination of the Ramaswami reference and the Wu reference fail to teach or suggest the requirements of claim 18.

CONCLUSION

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested that the rejection of the claims be withdrawn and full allowance granted. Should the Examiner have any further comments or suggestions, please contact Jessica Smith at (972) 240-5324.

Respectfully submitted,

GARLICK HARRISON & MARKISON, LLP

Dated: August 7, 2007

/Jessica W. Smith/

Jessica W. Smith
Reg. No. 39,884

Garlick Harrison & Markison, LLP
P. O. Box 160727
Austin, TX 78716-0727
Phone: (972) 240-5324
Fax: (469) 366-6731